A STUDY ON
FACTORS AFFECTING COST VARIATIONS
IN BUILDING CONSTRUCTION PROJECTS

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Abstract

Construction industry' always experience cost variations while executing projects. The final cost at the completion of the project, most of the tune higher than the anticipated cost at the beginning. So it has become a timely need to study the factors affecting cost variations in construction industry and suggest possible solutions in order to minimize these variations.

The objectives of the research covered four main areas. First to find out the factors affecting cost variations in building construction industry, then quantify the importance of the identified factors, check the behavior of cost variation factors with respect to clients' status, procurement method and project size. Finally to make recommendations in order to minimize the cost variations.

Research methodology consist of

(a) A detailed literature survey

(b) Collection of data based on structured questionnaire

(c) Data analysis and development of recommendations 30 as to minimize cost variations.

A similar research undertaken in Sri Lanka was found to be very limited .However (he limited research complied in Srilanka and research conducted in the other part of the world, were quite helpful in developing the investigation program and to get a broader knowledge in the research area A well-structured questionnaire was prepared using the information gathered from the literature survey, views obtained from the experts and the results of the pilot survey carried out in five construction sites. Subsequently data collection was carried out by an interviewed questionnaire survey comprising 72 clients, consultants and contractors involved in building construction industry. Totally 57 completed questionnaire were collected.

A commonly used statistical technique of importance index method was used for the analysis of data in this research. The cost variation factors were then tanked using these importance index values. In addition to ranking of cost variation factors, importance index values were further used to analyze the

factors with respect to their relationship with the client status, procurement method and the size of the project.

Both contractors and consultant have identified "variation*, addition* and alterations" as the most important cost variation factor. Contractors have selected [14]price escalations" as the second most important factor while consultant* selected" Ambiguities or discrepancies in the contract documents" According to contractors" Cost due to changes in quantities". "Coat due to delays". "Changes in exchange rates""Acceleration of works"*, "Engineer's instruction to change", "Construction method change due to engineer's comments (on contractor's method statement)". "Delayed possession of works", "Delays due to variations" arc in the top ten cost variation factors. Consultants have grouped "Coal due to omissions and mistakes", engineers instruction to change Acceleration of works", "Delays due to variations "Cost due to changes in quantities". "Delayed possession of works", "Cost due to delays" ,"Suspension of works" in the top ten cost variation factors.

"Variations, additions and alterations", "delays caused by unforeseen able obstructions to foundations construction'" and "delayed possession of works" have been identified ns the major cost variation factors when the client is a government organization while "Variations, additions and alterations", "Acceleration of works" and" price escalations" have been identified as the major cost variation factors when the client is a private organization

According to contractors and consultants "employer's cash position", "prices calations", "changes in exchange rates" and "acceleration of works" are more crucial for small and medium scale contracts while "Variations, additions and alterations", "cost due to changes in quantities" and "acceleration of works" are more crucial for large scale contracts. It was decided not to analyze cost variation factors with respect to procurement method, as collected data did not provide enough data.

based on these findings recommendations were proposed to minimize cost variations in Srilankan building construction industry. Proper planning of cash flow ,continuous project monitoring, proper site investigations, identification of weather patterns, use of experienced personnel, use of modern cost estimation techniques, use of visualization techniques to minimize alterations and availability of accurate drawings and specifications when needed are among the recommendations suggested to minimize constriction cost overrun.